



SUBSTITUTE SEQUENCE LISTING

enberg, Stephen P. Case, Casey C. Cox III, George N. Jamieson, Andrew Rebar, Edward J. Sangamo Biosciences, Inc.

<120> Selection of Sites for Targeting by Zinc Finger Proteins and Methods of Designing Zinc Finger Proteins to Bind to Preselected Sites

<130> 019496-001810US

<140> US 09/825,242 <141> 2001-04-02

<160> 97

<170> PatentIn Ver. 2.1

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His Ile Arg Thr His Thr Gly Glu Lys Pro Phe Ala Cys Asp Ile Cys
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35 40 45

Thr Arg Ser Asp Glu Leu Gln Arg His Lys Arg Thr His Thr Gly Glu 50 55 60

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Arg Ala His Gln Arg Thr His Thr Gly Glu Arg Pro Tyr Lys Cys Pro
35 40 45

Glu Cys Gly Lys Ser Phe Ser Arg Ser Asp Glu Leu Gln Arg His Gln 50 55 60

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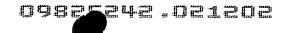
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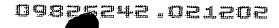
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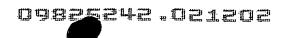


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knnknnkngg nnnknnknnk ngg
<210> 54
<211> 19
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence:target site DNA
      motif searched by protocol 2
<220>
<221> modified_base
<222> (1)..(19)
<223> n = g, a, c or t
<400> 54
                                                                    19
knnknnkngg nggnnknnn
<210> 55
<211> 19
<212> DNA
<213> Artificial Sequence
<220>
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      motif searched by protocol 2
<220>
<221> modified_base
<222> (1)..(19)
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<223> n = g, a, c or t
<400> 55
                                                                    19
knnknnkngg nnknggnnn
<210> 56
<211> 19
<212> DNA
<213> Artificial Sequence
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<223> Description of Artificial Sequence:target site DNA
      motif searched by protocol 2
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<223> n = g, a, c or t
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                                                                    19
knnknnkngg nnknnkngg
<210> 57
<211> 22
<212> DNA
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<223> Description of Artificial Sequence:target site DNA
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<223> n = g, a, c or t
<220>
<221> modified base
<222> (10)..(12)
<223> n = g, a, c or t, may be present or absent
<400> 57
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kngknnknnn nnkngknnkn nn
<210> 58
<211> 23
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<223> Description of Artificial Sequence:target site DNA
      motif searched by protocol 3
<220>
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<223> n = g, a, c or t
<220>
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<223> n = g, a, c or t, may be present or absent
<400> 58
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kngknnknnn nnnkngknnk nnn
<210> 59
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<213> Artificial Sequence
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      motif searched by protocol 3
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<220>
<221> modified base
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<223> n = g, a, c or t, may be present or absent
<400> 59
                                                                    22
kngknnknnn nnknnkngkn nn
<210> 60
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<220>
<221> modified base
<222> (11)..(13)
<223> n = g, a, c or t, may be present or absent
<400> 60
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kngknnknnn nnnknnkngk nnn
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<211> 22
<212> DNA
<213> Artificial Sequence
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<223> Description of Artificial Sequence:target site DNA
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<220>
<221> modified base
<222> (10)..(12)
<223> n = g, a, c or t, may be present or absent
                                                                    22
kngknnknnn nnknnknnkn gk.
<210> 62
<211> 23
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:target site DNA
      motif searched by protocol 3
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<223> n = g, a, c or t
<220>
<221> modified_base
<222> (11) . . (13)
<223> n = g, a, c or t, may be present or absent
<400> 62
                                                                    23
kngknnknnn nnnknnknnk ngk
<210> 63
<211> 22
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence:target site DNA
      motif searched by protocol 3
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<222> (1)..(22)
<223> n = g, a, c or t
<220>
<221> modified base
<222> (10)..(12)
<223> n = g, a, c or t, may be present or absent
                                                                    22
knnkngknnn nnkngknnkn nn
<210> 64
<211> 23
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:target site DNA
      motif searched by protocol 3
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<222> (11)..(13)
<223> n = g, a, c or t, may be present or absent
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                                                                    23
knnkngknnn nnnkngknnk nnn
<210> 65
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<212> DNA
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      motif searched by protocol 3
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<223> n = g, a, c or t
<220>
<221> modified base
<222> (10)..(12)
<223> n = g, a, c or t, may be present or absent
<400> 65
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```
22
knnkngknnn nnknnkngkn nn
<210> 66
<211> 23
<212> DNA
<213> Artificial Sequence
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      motif searched by protocol 3
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<223> n = g, a, c or t
<220>
<221> modified base
<222> (11)..(13)
<223> n = g, a, c or t, may be present or absent
<400> 66
                                                                    23
knnkngknnn nnnknnkngk nnn
<210> 67
<211> 22
<212> DNA
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      motif searched by protocol 3
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<223> n = g, a, c or t
<220>
<221> modified_base
<222> (10)..(12)
<223> n = g, a, c or t, may be present or absent
<400> 67
                                                                    22
knnkngknnn nnknnknnkn gk
<210> 68
<211> 23
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:target site DNA
      motif searched by protocol 3
```

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<220>
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<222> (1)..(23)
<223> n = g, a, c or t
<220>
<221> modified base
<222> (11) . . (13)
<223> n = g, a, c or t, may be present or absent
<400> 68
                                                                    23
knnkngknnn nnnknnknnk ngk
<210> 69
<211> 22
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:target site DNA
      motif searched by protocol 3
<220>
<221> modified_base
<222> (1)..(22)
<223> n = g, a, c or t
<220>
<221> modified_base
<222> (11)..(12)
<223> n = g, a, c or t, may be present or absent
<400> 69
                                                                    22
knnknnkngk nnkngknnkn nn
<210> 70
<211> 23
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:target site DNA
      motif searched by protocol 3
<220>
<221> modified_base
<222> (1)..(23)
<223> n = g, a, c or t
<220>
<221> modified base
<222> (12)..(13)
<223> n = g, a, c or t, may be present or absent
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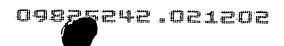
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<400> 70
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knnknnkngk nnnkngknnk nnn
<210> 71
<211> 22
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:target site DNA
      motif searched by protocol 3
<220>
<221> modified_base
<222> (1)..(22)
<223> n = g, a, c or t
<220>
<221> modified base
<222> (11)..(12)
<223> n = g, a, c or t, may be present or absent
<400> 71
                                                                    22
knnknnkngk nnknnkngkn nn
<210> 72
<211> 23
<212> DNA
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<220>
<223> Description of Artificial Sequence:target site DNA
      motif searched by protocol 3
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<222> (1)..(23)
<223> n = g, a, c or t
<220>
<221> modified base
<222> (12)..(13)
<223> n = g, a, c or t, may be present or absent
<400> 72
                                                                    23
knnknnkngk nnnknnkngk nnn
<210> 73
<211> 22
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:target site DNA
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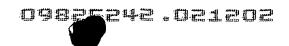


motif searched by protocol 3

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<220>
<221> modified base
<222> (1)..(22)
<223> n = g, a, c or t
<220>
<221> modified_base
<222> (11)..(12)
<223> n = g, a, c or t, may be present or absent
<400> 73
                                                                    22
knnknnkngk nnknnknnkn gk
<210> 74
<211> 23
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:target site DNA
      motif searched by protocol 3
<220>
<221> modified_base
<222> (1)..(23)
<223> n = g, a, c or t
<220>
<221> modified_base
<222> (12)..(13)
<223> n = g, a, c or t, may be present or absent
<400> 74
                                                                    23
knnknnkngk nnnknnknnk ngk
<210> 75
<211> 19
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:target site DNA
      motif searched by protocol 3
<220>
<221> modified base
<222> (1)..(19)
<223> n = g, a, c or t
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                                                                    19
knnknnkngk ngknnknnn
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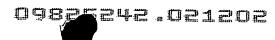


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<210> 76
<211> 19
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:target site DNA
      motif searched by protocol 3
<220>
<221> modified_base
<222> (1)..(19)
<223> n = g, a, c or t
<400> 76
                                                                    19
knnknnkngk nnkngknnn
<210> 77
<211> 19
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:target site DNA
      motif searched by protocol 3
<220>
<221> modified_base
<222> (1)..(19)
<223> n = g, a, c or t
<400> 77
                                                                    19
knnknnkngk nnknnkngk
<210> 78
<211> 10
<212> DNA
<213> Glycine max
<220>
<223> soybean FAD2-1 cDNA ZFP target segment FAD 1
<400> 78
                                                                    10
gaggtagagg
<210> 79
<211> 10
<212> DNA
<213> Glycine max
<223> soybean FAD2-1 cDNA target segment FAD 2
<400> 79
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10
gtcgtgtgga
<210> 80
<211> 10
<212> DNA
<213> Glycine max
<223> soybean FAD2-1 cDNA target segment FAD 3
<400> 80
                                                                     10
gttgaggaag
<210> 81
<211> 10
<212> DNA
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<220>
<223> soybean FAD2-1 cDNA target segment FAD 4
<400> 81
                                                                     10
gaggtggaag
<210> 82
<211> 10
<212> DNA
<213> Glycine max
<223> soybean FAD2-1 cDNA target segment FAD 5
<400> 82
                                                                     10
taggtggtga
<210> 83
<211> 12
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:test sequence
<400> 83
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agtgcgcggt gc
<210> 84
<211> 10
<212> DNA
<213> Artificial Sequence
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<220>



<223> Description of Artificial Sequence:target site with base immediately to the 3' side of target site <400> 84 10 agtgcgcggt <210> 85 <211> 10 <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence:target site with base immediately to the 3' side of target <400> 85 10 gtgcgcggtg <210> 86 <211> 10 <212> DNA <213> Artificial Sequence <223> Description of Artificial Sequence:target site with base immediately to the 3' side of target site <400> 86 10 tgcgcggtgc <210> 87 <211> 10 <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence:target site with base immediately to the 3' side of target site <220> <221> modified_base <222> (10) <223> n = undefined <400> 87 10 gcgcggtgcn <210> 88 <211> 7

098<mark>25</mark>242.021202

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<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:finger F3 for
      ordered output from optimal design target site
<400> 88
Glu Arg Asp His Leu Arg Thr
<210> 89
<211> 7
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:finger F2 for
      ordered output from optimal design target site
<400> 89
Arg Ser Asp Glu Leu Gln Arg
<210> 90
<211> 7
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence:finger F1 for
      ordered output from optimal design target site
<400> 90
Arg Lys Asp Ser Leu Val Arg
<210> 91
<211> 7
<212> PRT
<213> Artificial Sequence
<223> Description of Artificial Sequence:finger for
      disordered output from optimal design target site
<400> 91
Arg Ser Asp Glu Leu Thr Arg
<210> 92
<211> 7
<212> PRT
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<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: finger for
      disordered output from optimal design target site
<400> 92
Arg Ser Asp Glu Arg Lys Arg
<210> 93
<211> 21
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: three finger
      ZFP design using F3, F2 and F1 fingers for ordered
      output from optimal design target site
Arg Lys Asp Ser Leu Val Arg Arg Ser Asp Glu Leu Gln Arg Glu Arg
                                      10
Asp His Leu Arg Thr
              20
<210> 94
<211> 21
<212> PRT
<213> Artificial Sequence
<223> Description of Artificial Sequence:ZFP sequence
       (F1, F2 and F3) from SBS design GR-223
Arg Ser Ala Asp Leu Thr Arg Arg Ser Asp His Leu Thr Arg Glu Arg
                                      10
  1
Asp His Leu Arg Thr
              20
<210> 95
<211> 21
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: ZFP sequence
      (F1, F2 and F3) from Zif 268
Arg Ser Asp Glu Leu Thr Arg Arg Ser Asp His Leu Thr Thr Arg Ser
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1 5 10 15

Asp Glu Arg Lys Arg 20

<210> 96

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:ZFP sequence
 (F1, F2, F3) from SP1

<400> 96

Lys Thr Ser His Leu Arg Ala Arg Ser Asp Glu Leu Gln Arg Arg Ser

1 5 10 15

Asp His Leu Ser Lys

20

<210> 97

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:ZFP sequence
 (F1, F2, F3) from SBS design GL-8.3.1

<400> 97

Arg Lys Asp Ser Leu Val Arg Thr Ser Asp His Leu Ala Ser Arg Ser 1 5 10 15

Asp Asn Leu Thr Arg